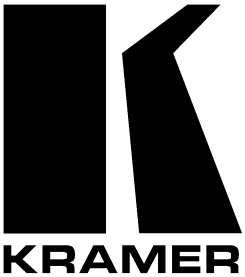
Kramer Electronics, Ltd.



USER MANUAL

Model:

VM-8DVI-R

1:8 DVI Distributor

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1 Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 350-plus different models now appear in 8 Groups[1], which are clearly defined by function.

Congratulations on purchasing your Kramer **VM-8DVI-R** *1:8 DVI Distributor.* The **VM-8DVI-R** is ideal for:

- Multiple screen applications
- Rental and staging

Each package includes the following items:

- **VM-8DVI-R** *1:8 DVI Distributor*
- Power cord
- This user manual[2]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high resolution cables[3]

3 Overview

The Kramer **VM-8DVI-R** is a 1:8 distribution amplifier for DVI-D signals, letting you connect the signal from a DVI source to up to 8 DVI acceptors. The **VM-8DVI-R** distributes signals having resolutions up to UXGA, including all HDTV formats. Since high-resolution DVI signals are very sensitive to cable quality and to PCB layout, the **VM-8DVI-R** uses a uniquely

1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

2 Download up-to-date Kramer user manuals from our Web site at http://www.kramerelectronics.com

3 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

designed PCB, which includes all the equalization, reclocking and amplifying circuitry to provide 8 high-quality output signals.

In particular, the **VM-8DVI-R**:

- Has a bandwidth of 1.65GHz
- Supports the DDWG DVI 1.0 standard
- Consists of a built-in re-clocking block that re-generates the DVI signal, so that several units may be cascaded
- Can read and store, in non-volatile memory[1], the EDID[2] block from one of the outputs, so it can then provide the EDID information to the DVI source even if the display device is not connected
- Has a default EDID for fast and efficient connection of the unit[3]
- Has nine DVI-I connectors, which are compatible with all types of DVI cables
- Is a cost-effective solution for distributing the TMDS[4] signals used for DVI, and uses state-of-the-art line drivers on each of the 8 outputs
- Can be used in any application where multiple DVI monitors, projectors or other receiving devices are to be driven via a single DVI source

Note that only the digital signal (DVI-D) is available on the DVI connector

The **VM-8DVI-R** fits in one vertical space of a standard 19" professional rack enclosure (1U)[5].

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise-levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances and position your Kramer **VM-8DVI-R** away from moisture, excessive sunlight and dust

4 Your VM-8DVI-R 1:8 DVI Distributor

Figure 1 and Table 1 define the **VM-8DVI-R** *1:8 DVI Distributor*:

1 While the machine is ON

2 EDID is Extended Display Identification Data (see section 6.1.1 for a detailed definition)

3 Lets you use the EDID default value when no display from which to read the EDID is connected

4 TMDS is Transition Minimized Differential Signaling, a technology for transmitting high-speed serial data. TMDS is used to digitally send graphics data to modern digitally interfaced display monitors

5 With the ear racks attached (see section 5)

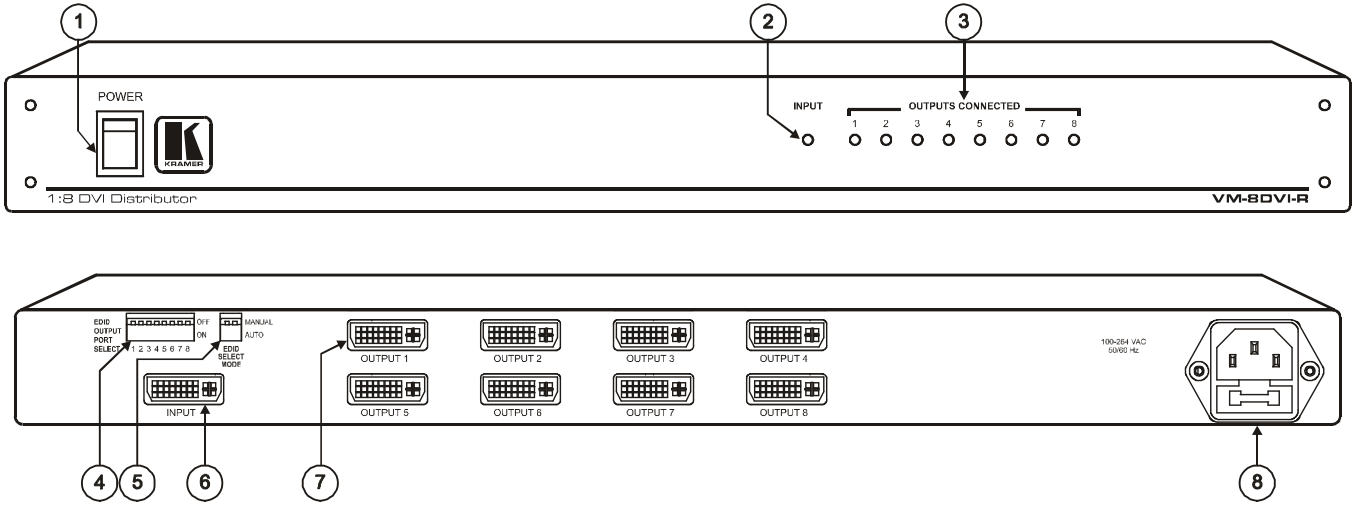


Figure 1: VM-8DVI-R 1:8 DVI Distributor

Table 1: VM-8DVI-R 1:8 DVI Distributor Features

#	Feature	Function
1	*POWER* Switch	Illuminated switch for turning the unit ON or OFF
2	*INPUT* LED	Lights when the input is active
3	*OUTPUTS CONNECTED* LEDs	Lights when an output is connected and active (from 1 to 8)
4	*EDID OUTPUT PORT SELECT* Dipswitches	Select the output from which the EDID will be acquired in the *MANUAL* mode
5	*EDID SELECT MODE* Dipswitches	Set to *MANUAL* for manual selection of EDID Set to *AUTO* for automatic selection of EDID
6	*INPUT* DVI Connector	Connect to the DVI source
7	*OUTPUT* DVI Connectors	Connect to the DVI acceptors (from 1 to 8)
8	Power Connector with Fuse	AC connector enabling power supply to the unit

5 Installing the VM-8DVI-R on a Rack

This section describes what to do before installing on a rack and how to rack mount.

Before Installing on a Rack

Before installing on a rack, be sure that the environment is within the recommended range:	
Operating temperature range	+5 to +45 Deg. Centigrade
Operating humidity range	5 to 65 % RHL, non-condensing
Storage temperature range	-20 to +70 Deg. Centigrade
Storage humidity range	5 to 95% RHL, non-condensing

CAUTION!!

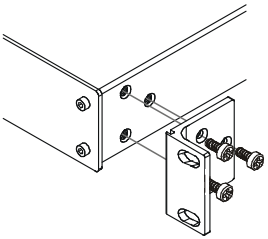
When installing on a 19" rack, avoid hazards by taking care that:

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, the use of power strips), and that you use only the power cord that is supplied with the machine.

How to Rack Mount

To rack-mount the machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.



2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note that:

- In some models, the front panel may feature built-in rack ears
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power
- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions (you can download it at: http://www.kramerelectronics.com)

6 Connecting a VM-8DVI-R 1:8 DVI Distributor

To connect the **VM-8DVI-R** as a 1:8 DVI distributor, do the following:

1. Connect a DVI source (for example, a DVI graphics source) to the INPUT connector.
2. Connect the 8 OUTPUT connectors[1] to up to 8 DVI acceptors, as follows:
   - The OUTPUT 1 connector to the DVI acceptor (for example, a projector)
   - The OUTPUT 2 to OUTPUT 8 connectors to the DVI acceptors (for example, displays)
3. Connect the power cord to the mains electricity and turn ON the POWER.
4. Acquire the EDID (see section 6.1).

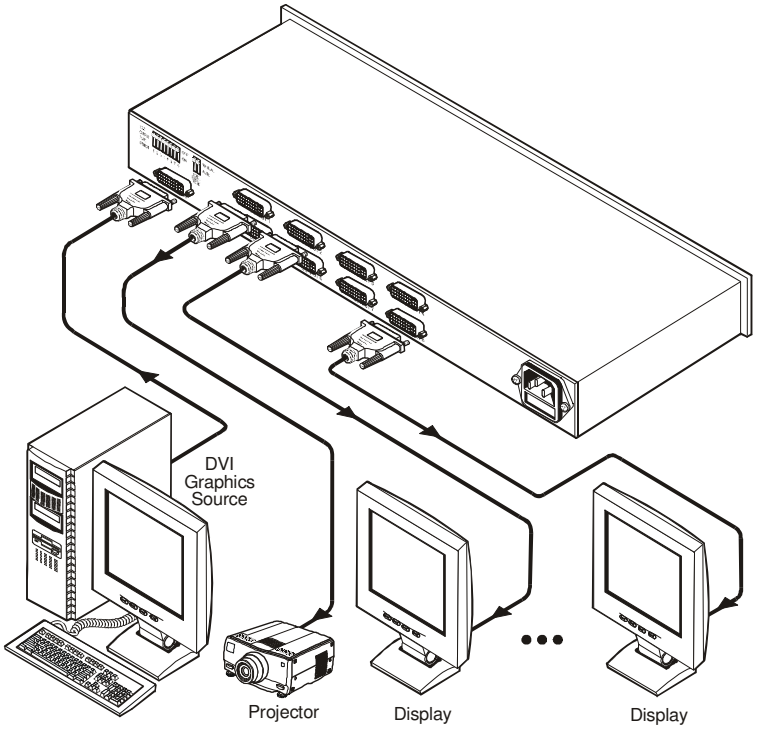


Figure 2: Connecting a VM-8DVI-R 1:8 DVI Distributor

1 As required. Up to 8 outputs can be connected on the VM-8DVI-R. Not all outputs need to be connected

6.1 The EDID Feature

The **VM-8DVI-R** can operate with the factory default EDID, or with an EDID that is acquired from one of the outputs either automatically or manually.

6.1.1 Defining EDID

The Extended Display Identification Data (EDID[1]) is a data-structure, provided by a display, to describe its capabilities to a graphics card (that is connected to the display's source). The EDID enables the **VM-8DVI-R** to "know" what kind of monitor is connected to the output. The EDID includes the manufacturer's name, the product type, the phosphor or filter type, the timing data supported by the display, the display size, luminance data and (for digital displays only) the pixel mapping data.

6.1.2 Acquiring the EDID

The EDID is acquired every time you turn the machine ON. You can either acquire the EDID automatically or manually from one of the connected outputs, or work with the default EDID.

6.1.2.1 Acquiring or Restoring the Factory Default EDID

To select an EDID:

1. Disconnect all the outputs.
2. Turn OFF the power on the **VM-8DVI-R** and then turn it ON again.

If there are no outputs connected to the **VM-8DVI-R**, the factory default EDID is acquired once the machine is turned ON

1 EDID is defined by a standard published by the Video Electronics Standards Association (VESA)

If one or more outputs are connected you can acquire the EDID either automatically or manually:

6.1.2.2 Automatically Acquiring the EDID[1]

To automatically acquire the EDID:

1. Turn the power OFF on the **VM-8DVI-R**.
2. Set both of the EDID SELECT MODE dipswitches to AUTO.
3. Turn the power ON.

In the automatic EDID SELECT MODE, the EDID is acquired from the acceptor that is connected to the lowest numbered OUTPUT

For example, if OUTPUT 3 and OUTPUT 7 are connected, the EDID will be acquired from OUTPUT 3.

6.1.2.3 Manually Acquiring the EDID[2]

To manually acquire the EDID:

1. Turn the power OFF on the **VM-8DVI-R**.
2. Set both of the EDID SELECT MODE dipswitches to MANUAL.
3. In the EDID OUTPUT PORT SELECT, set the channel (from 1 to 8) from which you want to acquire the EDID.
4. Turn the power ON.

In the manual EDID SELECT MODE, the EDID is acquired according to the setting on the EDID OUTPUT PORT SELECT dipswitches

For example, if OUTPUT 3 and OUTPUT 7 are connected, and the EDID OUTPUT PORT SELECT dipswitch 7 is set to ON, the EDID will be acquired from OUTPUT 7.

1 If no display is connected, then the factory-default EDID is used (see 6.1.2.1)

2 If a display is not connected to the channel selected by the dipswitches, then the factory-default EDID is used (see 6.1.2.1)

6.2 Setting the Dipswitches

This section describes the machine dipswitches. By default, all the **VM-8DVI-R** dipswitches are set to OFF and AUTO. Figure 3 and Table 2 describe the dipswitches, which consist of two sets, from 1 to 8 and from 1 to 2.

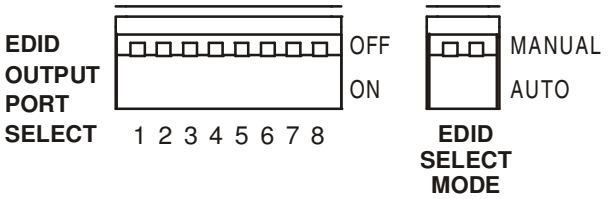


Figure 3: VM-8DVI-R Dipswitches

Table 2: Dipswitches settings

DIPS	Feature	Function
1 to 8	*EDID OUTPUT PORT SELECT*	Set one of the dipswitches (from 1 to 8) to ON, to select the port from which the EDID will be acquired in the MANUAL mode
1 to 2	*EDID SELECT MODE*	Set both dipswitches either to MANUAL or AUTO for manual or automatic selection of the EDID

7 Technical Specifications

Table 3 includes the technical specifications:

Table 3: Technical Specifications[1] of the VM-8DVI-R 1:8 DVI Distributor

INPUT:	1 DVI[2], 1.2Vpp on a DVI Molex 24pin female connector; DDC signal 5Vpp (TTL)
OUTPUTS:	8 DVI[2], 1.2Vpp on DVI Molex 24pin female connectors; DDC signal 5Vpp (TTL)
BANDWIDTH:	1.65GHz
CONTROLS:	Dipswitches for selecting and storing EDID information
POWER SOURCE:	10 Watts (maximum) 220V
DIMENSIONS:	19-inch (W), 7-inch (D), 1U (H)
WEIGHT:	2.5 kg. (5.5 lbs.) approx.
ACCESSORIES:	Power cord, Brackets (with screws)

1 Specifications are subject to change without notice

2 On a DVI connector. Note that only the digital signal (DVI-D) is available on the DVI connector

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
   - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   - ii) Product modification, or failure to follow instructions supplied with the product
   - iii) Repair or attempted repair by anyone not authorized by Kramer
   - iv) Any shipment of the product (claims must be presented to the carrier)
   - v) Removal or installation of the product
   - vi) Any other cause, which does not relate to a product defect
   - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.
NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.
This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC Rules and Regulations: Part 15: "Radio frequency devices Subpart B – Unintentional radiators"

CAUTION!

- ⌦ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- ⌦ Use the supplied DC power supply to feed power to the machine.
- ⌦ Please use recommended interconnection cables to connect the machine to other components.

For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found.
We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

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